"Lightning" in Johnson's Encyclopædia). Several hypothetical cases are considered, and the author concludes that, although his computations may need some modification after further study, we can safely say that no appreciable velocity of air is produced by compression from falling rain. The same journal contains a long paper on the theory of the wind-vane by Prof. G. E. Curtis, reprinted from the *American Journal of Science* for July last. He discusses the relative stability of a straight vane, and that with a double or spread tail. The first reference to the latter is apparently in *Voigt's Magazin*, 1797, and this form has been in common use in England since about 1840. The formulæ show that for a frictionless bearing (1) that the oscillations of both vanes are smaller as the vanes are longer and larger; (2) that the spread vane is always more stable than the straight vane; and (3) that this advantage in stability is greater for long vanes than for short vanes, and is independent of the wind velocity. The author finds that, with equal friction, a spread vane is the more sensitive, and that consequently for two vanes of equal sensitiveness the spread vane will have the greater friction and will come to rest more quickly.

THE *Jahresbericht* of the Central Physical Observatory of St. Petersburg for 1885 and 1886, and the *Annalen* for the year 1885, have recently been published. The Russian system is very important, not only as being the most extensive on the globe, but on account of the great climatic contrasts and the completeness of the observations. The present Director, Dr. H. Wild, of Berne, was appointed in 1867, and under his able superintendence the number of stations has greatly increased and the quality of the observations has much improved. The central Observatory is situated about a mile from the sea, on the island of Wassili-Ostrow; the principal observing department has been transferred since 1878 to Pawlowsk, about four miles distant, and is placed under the superintendence of Dr. E. Leyst. The observations for 1885 are contained in two quarto volumes of about 700 pages altogether. In addition to the first class observatories, the number of stations of the second order amounts to 255, and of these the monthly and yearly results of 208 are published on the international scheme; from 38 of the stations the observations are published *in extenso*. Many new stations have been added recently, especially in Siberia, and in newly-acquired territories, *e.g.* Merv, Batoum, &c. One of the Siberian stations, viz. Werchojansk (lat. 67° 34′, long. 133° 51′) is stated by Dr. Köppen to be the coldest known point of the earth. The mean temperature there for the year was − 2°·9 F. The mean for January and December was − 62°·9, and the minimum in January − 88°·6 (far beyond the range of the usual tables). The mean temperature of July rose to 60°·6, and the minimum for that month was 39°·2. The number of rainfall stations for which the observations are given is 650, against 252 in the previous year; the data published are the monthly values, the maximum fall in 24 hours, and the number of days of rain and snow. A complete catalogue of the meteorological observations in Russia and Finland, by Dr. E. Leyst, giving the life-history of each station, has been published in the *Repertorium für Meteorologie* this year. This work also contains many valuable discussions of the vast amount of materials available for the purpose. The index of the *Annalen*, being mostly in Russian, is difficult to refer to.

THE WORK OF THE INTERNATIONAL CONGRESS OF GEOLOGISTS.[1]

I.

ELEVEN years ago the Association met at Buffalo. It was the year of the Centennial Exhibition, and we were honoured by the presence of a number of European geologists. This naturally opened the subject of the international relations of geology, and the proposition to institute a Congress of Geologists of the world took form in the appointment by the Association of an International Committee. The project thus initiated found favour elsewhere, and there resulted an international organization, which up to the present time has held three meetings. It was convened first at Paris in 1878, then at Bologna in 1881, and at Berlin in 1885. Its next meeting will be held in London next year, and an endeavour will be made to secure for the United States the honour of the fifth meeting. The original Committee of the Association has been continued, with some change of membership, and has sent representatives to each session of the Congress.

The work of the Congress, as originally conceived and as subsequently undertaken, has for its scope geologic nomenclature and classification, and the conventions of geologic maps. The particular classifications attempted are the establishment of the major divisions used in historic and stratigraphic geology and the subdivision of volcanic rocks. In nomenclature three things are undertaken: (1) the determination of the names of historic and stratigraphic divisions, (2) the formulation of rules for nomenclature in palæontology and mineralogy, and (3) the establishment and definition of the taxonomic terms of chronology (period, epoch, &c.) and of stratigraphy (system, series, &c.). The map conventions most discussed are colours, but all signs for the graphic indication of geologic data are considered. The Congress has also undertaken the preparation of a large map of Europe, to be printed in forty-nine sheets.

The work was for the most part planned at the Paris meeting, and Committees were appointed to formulate subjects for action by the Congress at subsequent sessions. Briefly stated, the work accomplished to the present time is as follows. Agreement has been reached as to the rank and equivalence of the taxonomic terms employed in chronology and stratigraphy, a set of rules for palæontologic nomenclature has been adopted, and many sheets of the map of Europe have been prepared for the engraver. A partial classification of stratified rocks has been agreed to, and also a partial scheme of map colours, but the reports of proceedings indicate that action in these matters is tentative rather than final.

It is understood that both of these subjects will have prominent place in the proceedings at the London meeting, and the American Committee is endeavouring to prepare itself for representative action at that meeting by ascertaining the opinions of all American geologists on the various subjects. It has asked this Section to set apart a day for the discussion of some of the more important questions, and it can hardly be doubted that the Section will realize the mutual advantage of thus assigning the time requested. I am personally so impressed with the importance of the possible work of the Congress that I shall devote the present hour also to its consideration.

The first thing the Congress did was to select names for a set of categories to express the taxonomic rank of stratigraphic divisions on the one hand, and of chronologic divisions on the other. In the terminology of zoology and botany the words kingdom, class, order, family, genus, species, and so forth, however difficult of definition they may severally be, nevertheless are used always in the same order of inclusion. No systematist in those sciences would think of grouping orders together and calling them a family, or of styling a group of families a genus. But in geology there is no such uniformity of usage. With some writers a group is larger than a series, with others it is smaller. With some an age includes several periods, with others a period includes several ages. There are even writers who ignore the distinction between stratigraphy and chronology; and among the classifications submitted to the Congress is one in which an age is subdivided into systems. There is a manifest advantage in bringing order out of this chaos, and so great is the utility of uniformity and perspicuity that the decisions of the Congress in this regard will unquestionably be followed by future authors. The terms and the order adopted by the Congress are as follows. Of stratigraphic divisions, that with the highest rank is *group*, then *system*, *series*, and *stage*. The corresponding chronologic divisions are *era*, *period*, *epoch*, and *age*. This order of rank is strange to most English readers and writers, and so is one of the terms—*stage*; but the strangeness is only a temporary disadvantage, and will not seriously retard the adoption of the convention. The fact that we have previously used the words in a different sense, or that their etymology might warrant a different meaning, need not deter us, for we know from frequent experience that the connotations of a word transferred from one use to another quickly disappear from consciousness, leaving it purely denotative. The introduction of the word *stage*, which can hardly be said to have had an English status heretofore, or at least the introduction of some new word for that part of the column, was necessitated by the restriction of the word *formation* to a special meaning—the designation of mineral masses with reference to their origin.

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[1] Vice-Presidential Address read to Section E of the American Association for the Advancement of Science, August 10, 1887, by Mr. G. K. Gilbert.

The same restriction vacated another office that had been filled by formation, and to this office no appointment was made. I refer to the use of the word to denote indefinitely an aggregate of strata—as in saying, this formation should be called a series rather than a system. This is an important function, for which some provision must be made. I suggest that we may advantageously enrich our language by the permanent adoption of *terrane*, a word whose English meaning has not been well established.

The fixation of the chronologic terms creates a similar difficulty. We have crystallized out of our magma the terms *era*, *period*, *epoch*, and *age*, and there remain in the ground-mass only *eon*, *cycle*, and *time*. Of these, *eon* has a poetic connotation which seems to unfit it for this particular use; *cycle* implies repetition or recurrence; and *time* has been so generally applied to unlimited duration that it is difficult to apply it also to limited duration, even though the nature of the limitation be indefinite. On the whole, *time* seems open to the least objection, but I cannot help regretting that either *period* or *age*, both of which have heretofore passed current in the indefinite sense, was not reserved by the Congress for that function. With English-speaking peoples the word *eon* could have been better spared for the definite series.

But while the terms selected by the Congress are not beyond criticism, the benefits to be derived from an agreement in an orderly system are so great that I for one shall unhesitatingly adopt them as they stand—provided, of course, that the Congress makes no effort to improve its selection. A small reform of this nature yields its profit to this as well as future generations, and I hold it a duty to favour even those reforms which involve so much effort and pains that their blessings cannot be realized by those who initiate them. Such are the exchange of our English spelling for a rational system, and the exchange of decimal notation in arithmetic for a binary notation. My application of the new nomenclature begins with this address, in the preparation of which I have experienced its utility. That you may have no difficulty in interpreting my reformed language, I have placed the taxonomic legend on the wall, with the addition of the complementary indefinite terms—terrane and time.

Terranes.		Times.
Group.	...	Era.
System.	...	Period.
Series.	...	Epoch.
Stage.	...	Age.

There are propositions before the Congress to distinguish the names of individual groups, systems, series, and stages by means of terminations, those of the same rank having the same termination. Thus it is proposed by a Committee that every name of a group shall end in *ary*—Tertiary, Primary, Archeary; it is proposed that names of systems end in *ic*—Cretacic, Carbonic, Siluric; it is proposed that names of series end in *ian*—Eifelian, Laramian, Trentonian; and it is proposed that stage names terminate with *in*. Another Committee suggests that *ic* be used for stages instead of systems. The adoption of such a plan would enable a writer or speaker to indicate the taxonomic rank of a terrane without adding a word for that purpose. If he regarded a certain terrane taking its name from Cambria as a system, he would call it the Cambric; if he esteemed it only a series, he would say Cambrian; and there would be no need of adding the word system or series in order to express his full meaning. Conversely, the reader or hearer would always learn its taxonomic rank, or supposed rank, whenever a terrane was mentioned. These I conceive to be the advantages derivable from the change, but they would not be the only effects. It would become impossible for a geologist to name or allude to a terrane without declaring its rank, and the consequences of this would be evil in many ways. In the first place, one could not discuss terranes from any point of view without expressing an opinion as to their taxonomy, and the change would thus contravene one of the most important rights of opinion—namely, the right to reserve opinion. Again, geologists who differed as to the rank of a terrane would necessarily terminate its title differently, and a needless synonymy would thus be introduced. In the third place, the created necessity for taxonomic discrimination on all occasions would tend to direct undue attention to taxonomic problems. Taxonomy would be conceived by many geologists as an end instead of a means, just as correlation has been conceived, and energy would be wasted in taxonomic refinement and taxononomic controversy. It is convenient for purposes of description and comparison to classify the strata that constitute a local columnar section in phalanges of various magnitude or rank, but the criteria on which we depend for discrimination are in the nature of things variable, and offer ground for endless difference of opinion; and it would be extremely unfortunate to have such differences perpetually brought to the foreground.

Another subject considered by the Congress is the nomenclature of palæontology. A Committee appointed for the purpose formulated rules for the establishment of the names of genera and species, and their report was adopted by the Congress. I have no opinion to express as to the wisdom of the rules, but it is a matter of surprise that a body of geologists assumed to speak with authority on the subject. From one point of view palæontology is a part of geology; from another point of view it is a part of biology. In so far as it names genera and species it is purely biologic, and it would seem proper that the students of fossils unite with the students of living animals and living plants in the adoption of rules of nomenclature.

A similar remark applies to the nomenclature of mineralogy, in regard to which no action has yet been taken. The most intimate relations of systematic mineralogy are with chemistry.

Yet another projected work of the Congress is the classification of eruptive rocks. Up to the present time action has been deferred, and it may reasonably be hoped that no scheme of classification will be adopted. If there existed a system of classification which gave general satisfaction and had stood the test of time, there would be little harm—and little or no advantage—in giving it the official stamp of approval. If the main features of a classification were well established and the residuary discrepancies were recognized as unessential, it is conceivable that some benefit might be derived from the submission of the matter to an assembly of specialists. But the actual case is far different. Not only is there wide difference as to the classification of volcanic rocks, but there is no agreement as to the fundamental principles on which their classification should be based, for we still lack an accepted theory of volcanism. At the same time observation is being pushed with great vigour, and with the aid of new and important methods. With the rapid growth of knowledge and ideas, classifications are continually remodelled, and the best is in danger of becoming obsolete before it has been printed and circulated. Should the Congress enter the lists, one of two things would occur. Either its classification would be treated like that of an individual, and ignored as soon as a better one was proposed; or it would be regarded as more authoritative, and new facts would for a time be warped into adjustment with it. In either case the reputation of the Congress would eventually suffer, and in one case science would suffer also.

There remain to consider the two most important undertakings of the Congress, the classification of terranes and the unification of map colours. The Congress is attacking these subjects indirectly by means of a third undertaking, the preparation of a geologic map of Europe, and this method of approach has had the effect of making it difficult properly to interpret its action. There can be no doubt that those who originally organized the work contemplated the enactment of a stratigraphic classification to be applied to the entire earth, and the selection of a colour scheme for use either in all geologic maps or in all general geologic maps. But at the Berlin session the Committee in charge of work on the map of Europe pressed the Congress for the determination of questions on which hung the completion of the map, and many hasty decisions were reached, while not a few disputed points were referred to the Map Committee. The debates indicate that much or all of this work was provisional or of merely local application, but the resolutions adopted show little qualification. It should be added that the official minutes of the meeting are still unpublished. In view of the uncertainty thus occasioned I shall not attempt to characterize the attitude of the Congress on the subject of classification, but shall merely develop my individual view.

It is the opinion of many who have discussed the general classification of terranes by convention of geologists that the smallest unit of such classification should be the stratigraphic system. What is a stratigraphic system? The Congress implies a definition in saying that a system includes more than a series and less than a group, and that the Jurassic is a system; but this gives only a meagre conception, and we need a full one. As the problem of classification demands a true conception of a system, and as there is reason to believe that a false conception is abroad, it is proper that in seeking the true one we begin with the elements.

The surface of the land is constantly degraded by erosion, and the material removed is spread on the floor of the ocean, forming a deposit. This process has gone on from the dawn of geologic history, but the positions and boundaries of land and ocean have not remained the same. Crust movements have caused the submergence of land, and the emergence of ocean bottom, and these movements have been local and irregular, districts here and there going up while other districts went down. The emergence of ocean bottom exposes the deposit previously made on it, and subjects it to erosion. In this way every part of the known surface of the globe has been the scene of successive deposition and erosion, and in many districts the alternations of process have been numerous. It is manifestly impossible that either erosion or deposition should ever have prevailed universally, and it has been established by the study of stratigraphic breaks that a time of erosion has often interrupted deposition in one region while deposition was uninterrupted in another.

In transportation from its region of erosion to its place of deposition detritus is assorted, and it results that the simultaneous deposits on the bottom of an ocean are not everywhere the same. Equal diversity is shown in the ancient deposits constituting geologic formations. It is a general fact that synchronous formations have not everywhere the same constitution.

Many of the variations in deposits are correlated with depth of water and distance from shore, and it results that elevation and subsidence in regions of continuous deposition produce changes in the nature of the local deposit.

The animals and plants of the earth are not universally distributed, but are grouped in provinces. In the geologic past similar provinces existed, but their boundaries were different, shifting in harmony with the varying geography of the surface. From time to time the barriers separating contiguous provinces have been abolished, suffering them to coalesce; and conversely new barriers have arisen, creating new provinces. From the earliest Palæozoic to the present time the species of animals and plants have been progressively modified, the nature of the modification depending on local conditions. The faunas and floras of different provinces thus become different, and the longer the provinces remain distinct the greater is the divergence of life. The removal of a barrier either produces a new fauna by the fusion of the two previously separated, or else obliterates one and extends the area of the other. In either case there is a change toward the unification of life, and in either case there is an abrupt change in a local fauna. Thus the secular evolution of species, combined with the secular and kaleidoscopic revolution of land areas, leads to two antagonistic tendencies, one toward diversity of life on different parts of the globe, the other toward its uniformity. The tendency toward uniformity affords the basis for the correlation of terranes by comparison of fossils; the tendency toward diversity limits the possibilities of correlation.

If now we direct attention to some limited area and study its geology, we find that under the operation of these general processes it has acquired a stratigraphic constitution of a complex nature. Its successive terranes are varied in texture. Breaks in the continuity of deposition are marked by unconformities. The fossils at different horizons are different, and when they are examined in order from the lowest to the highest, the rate of change is found to vary, being in places nearly imperceptible and elsewhere abrupt. It is by means of such features as these —that is, by lithologic changes, by unconformities, and by life changes—that the stratigraphic column is classified into groups, systems, series, and stages. A system is a great terrane separated from terranes above and below by great unconformities or great life breaks or both. Smaller unconformities, smaller life changes, and lithologic changes are used for the demarcation of series and stages; and, on the other hand, exceptionally great unconformities and life breaks are used to delimit groups. As the same criteria determine groups, systems, and series, differing only in degree, the precise definition of the term system is impossible, and in many cases the gradation of a terrane as a group, a system, or a series is largely a matter of convenience. From this point of view a system is somewhat artificial, but there is a more important sense in which it is natural. It is limited by stratigraphic or palæontologic breaks above and below, and these breaks are natural. The taxonomist is not warranted in dividing systems where no such break exists.

Transferring now our attention to some other area, distant from the first, and studying its stratigraphy, we find that the same principles enable us to divide it independently into stages, series, systems, and groups. Its fossils are not the same, but they are to a certain extent similar, and the sequence of life is approximately parallel. We cannot compare stage with stage, nor series with series perhaps, but we can compare system with system, and making the comparison we discover that the breaks are at different places. While one area was upraised and subjected for a time to erosion, the other received continuous deposition. While life in one area, enjoying constant conditions, was almost unchanged for long ages and even epochs, it was revolutionized in the other by the irruption across some obsolescent barrier of strong and aggressive faunas and floras. The systems of one area, therefore, do not coincide with the systems of the other in their beginning and ending. They may differ in number, and they may differ greatly in magnitude, and in the duration they represent. They are, in fact, a different set of systems.

The case I have described is ideal, but not false. It represents the common experience of those who have developed the geologic histories of remote districts, and attempted to correlate them with the geologic history of Europe. There does not exist a world-wide system nor a world-wide group, but every system and every group is local. The classification developed in one place is perfectly applicable only there. At a short distance away some of its beds disappear and others are introduced; further on, its stages cannot be recognized; then its series fail, and finally its systems and its groups.

If I have properly characterized stratigraphic systems—if they are both natural and local—it goes without saying that the classification of the strata of all countries in the dozen or so systems, as proposed by some of the members of the Congress, is impossible.

I hasten to add that from the point of view of these gentlemen what they advocate is not necessarily impossible, for they have a different conception of a system. They regard it not as local but as universal. It is their privilege to define their terms as they please, and we will not dispute about mere words, but I cannot too strongly or too earnestly insist that a system which is universal is artificial. It may be natural in one geologic province, but it is artificial in all others. Take for example the Jurassic. It is a natural system in Europe. In the eastern United States no strata are called Jurassic with confidence, and at the west the rocks called Jurassic merge with those called Triassic. In India, Medlicott tells us, a Jurassic fauna occurs at the summit of a great natural system containing a Permian fauna near its base. In New Zealand, according to Hutton, a continuous rock-system, dissevered by great unconformities from other systems, bears at top fossils resembling those of the lower Jurassic, and lower down fossils of Triassic facies. To establish a Jurassic system in either of these countries it is necessary to divide a natural system, and a Jurassic system thus established would be necessarily artificial.

This is the sort of classification implied by the assumption that systems are world-wide. It is not impossible, but it is highly unadvisable. It is classification for the sake of uniformity, and its uniformity is Procrustean. The natural systems of a region are the logical chapters of its geologic history. If you group its strata artificially according to the natural divisions of another region, you mask and falsify its history. The geologic history of the earth has as great local diversity as its human history. As in human history, there are inter-relations and harmonies and a universal progress, but these are perceptible only in the general view, and the student whose preconceptions lead him to exaggerate the harmonies and ignore the discrepancies perverts the meaning of every page.

I prefer, therefore, my own definition of system, making it natural and consequently local, and I earnestly oppose any attempt to coerce the geology of one country in a rigid matrix formed over and shaped by the geology of another country.

The ideas I oppose have arisen in connection with the work of correlation. Some geologists appear to regard correlation as the determination in distant localities of identities; the more philosophic regard it as the determination of the actual relations, whether they be of identity or difference. With the former the basis of correlation is the universality of geologic systems; with the latter it may be said to be the universality of geologic time.

Now in the comparative study of local geologic histories, just as in the comparative study of local human histories, it is a matter of convenience to have a common scale of time. It is not essential, but it is highly convenient. In human history we use an astronomic scale of equal parts, designating each unit by a number. In geology no scale of equal parts is available, and we employ the eras and periods, and to some extent the epochs, of the local geologic history first deciphered—that of Europe. These time-divisions bear the same names as the groups, systems, and series of strata whose deposition occurred within them.

So far as the science of geology is concerned the selection of Europe as its first field of study was a matter of chance, and the adoption of the European time scale as a general standard may therefore be said to have been accidental. Though the local rock scheme on which it is based is natural, the time scale, considered as universal, is arbitrary. Another locality would have afforded a different scale, but its authority would neither be greater nor less. The scale being recognized as arbitrary, and a mere matter of convenience, it is legitimate to modify and fix it by formal convention. The Congress can do good service to geologic technology by putting it in the best possible shape and giving it an official status. In my judgment only a small number of divisions should be admitted, not more than the number of periods of the European scheme. In a general way the durations represented by the co-ordinate divisions should be as nearly equal as practicable, but a certain concession might be made to chronologic perspective on account of our superior opportunities for studying the later history. Some of the shorter periods might perhaps be united under new names. Each line of division between periods should be defined by means of a stratigraphic plane of division, and this can be done with precision if a locality is made part of the definition.

Especially should pains be taken to declare the arbitrary nature of the scale. Even with this precaution it will be misconstrued by many, for there is a tendency of the mind to attach undue weight to classification. Wherever we draw lines of separation, we lose to a certain extent the power to recognize continuity. When, for example, the clock strikes twelve on New Year's Eve, time seems to stop and begin again. We speak of the achievements of the nineteenth century—and despite ourselves we think of them too—as though a new industrial epoch began in A.D. 1800. And so it is easy for the beginner in geology to accept as discontinuous the eras and periods of which his text-book treats, and it is hard for him afterward to unlearn the lesson.

There is reason to believe that confusion of ideas in regard to geologic classification has been fostered by the employment of the same set of names for the divisions of the time scale and for the local terranes on which they are founded. It might be well to furnish the time scale with names suggesting times—such names as the brothers Rogers applied to the terranes of Pennsylvania; but so radical a change is hardly feasible, especially as we should thus lose the mnemonic connection of times with corresponding terranes. I propose, as a means of accomplishing the end with the least inconvenience, that a set of time words be derived from the terrane names by modifying the final syllables. The time words should all have the same termination, and that should differ from any terminations occurring in the terrane names. I suggest for the ending of time words the syllable *al*. With such a nomenclature, Jurassic and Devonian would denote only certain European rock systems, while Jural and Devonal would denote periods of the standard time scale; and we could speak of the Chico-Tejon series as partly Eocenal and partly Cretaceal without seeming to imply the existence in California of the Eocene and Cretaceous systems of Europe.

A few minutes ago I opposed the differentiation of words by terminations because it abrogated the power of indefinite expression; I now favour it for the same reason. It is well to be indefinite as to the taxonomic rank of terranes while their characters are imperfectly known, but it is not well to confuse terranes with times.

It is not to be assumed that a time scale adopted now as the best possible will continue indefinitely to be the best possible; the day will inevitably come when it can be improved. In the fuller light of the future we may recognize as very unequal periods that we now deem equivalent, and the possibilities of defining pre-Cambrial periods are unlimited. Even now there are announced beneath the lowest fossil-bearing terrane of the Lake Superior region two systems of clastic rocks limited above and below by great unconformities, and Irving demands their recognition as a group, distinct from the Archæan. If his voice heard, the time scale will include an era between the Palæozoal and the Archæal, and this era will supply the needs of the systematist until great additions have been made to our present knowledge of the older rocks.

(*To be continued.*)

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—The resignation of Prof. Prestwich and the continued illness of Prof. Moseley have produced two gaps in the scientific professoriate this term. Though the Professor of Geology has left Oxford, his successor will not be appointed until after Christmas. In Prof. Moseley's absence the work of the morphological department is being carried on by Mr. Hatchett Jackson and Mr. G. C. Bourne, who has just been elected to a Fellowship at New College.

In the department of physics, Prof. Clifton is giving no honour lectures, but has an elementary course on mechanics and acoustics. Mr. Selby is lecturing on elasticity and on electrostatics, both treated mathematically. At Christ Church, Mr. Baynes gives lectures and practical instruction in electricity and magnetism. Sir John Conroy and Rev. F. J. Smith are lecturing on elementary physics at Balliol and Trinity.

The chemical department at the Museum has been strengthened by the addition of Mr. V. H. Veley to the staff; the usual courses of lectures are being given by Mr. Fisher and Dr. Watts, and Prof. Odling is lecturing on glycerine and its derivatives. At Christ Church, Mr. Vernon Harcourt has a class for quantitative analysis, and lectures on elementary chemistry. Sir John Conroy is lecturing on chemical physics at Balliol.

The Physiological Laboratory is continuing its usual work with little alteration. Prof. Burdon Sanderson's lectures are on circulation, respiration, and bodily motion.

Prof. Balfour, besides lecturing on extinct plants for the Professor of Geology, is giving a course on general morphology. Dr. Tylor continues to expound the Pitt-Rivers Collection, a fresh portion which will shortly be rearranged and opened to the public.

Mr. Primrose McConnell is lecturing on the principles of agriculture, mainly for the benefit of India Civil Service candidates.

During this term there will be an examination for Scholarships in Natural Science at Balliol, Exeter, Christ Church, and Trinity jointly, beginning on November 17.

A pamphlet has just been issued from the Clarendon Press giving full information as to the methods of obtaining medical degrees in Oxford, and the instruction in medicine provided by the University.

CAMBRIDGE.—The Museum and Lecture Rooms Syndicate have issued another report pressing for new accommodation for Pathology and Physiology, and suggesting that the department of Pathology, including its Museum, could be located in the old chemistry buildings when the new laboratory is completed. They recommend the building of new rooms for Human Anatomy and Physiology on the Corn Exchange site at the northern end of the Museum site. It is an important feature of this scheme that it would leave free the present Human Anatomy Schools and Museum to be added to the frontage available in Downing Street for a Geological Museum.

Messrs. W. H. Macaulay and W. B. Allcock have been appointed Moderators for the year beginning May 1, 1888. Messrs. J. Larmor and W. Welsh are appointed Examiners in Part I. of the Mathematical Tripos for the same year.

Dr. Smith's prizes for the present year have been adjudged as follows:—(1) Mr. Augustus Edward Hough Love, St. John's College, for an essay on "Small Free Vibrations and Deformation of a thin Elastic Shell," and on "The Force and Forced Vibrations of an Elastic Spherical Shell containing a Given Mass of Liquid." (2) Mr. Arthur Berry, King's College, for an essay on "Joint Reciprocants."

SCIENTIFIC SERIALS.

The Quarterly Journal of Microscopical Science for August 1887, vol. xxviii. part 1, contains the following papers:—On the anatomy of the Madreporia, part 3, by Dr. G. Herbert Fowler, (plates i. and ii.) In this memoir the author deals with the